Maxxam
A Bureau Veritas Group Company

Your Project #: PFC
Site Location: BFTA
Your C.O.C. #: 593726-02-01

Attention:Tom Cambareri

Cape Cod Comission
Cape Cod Commission
3225 Main Street
Barnstable, MA
USA 02630

Report Date: 2017/02/10
Report #: R4355685
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B718483
Received: 2017/01/27, 13:25

Sample Matrix: Soil
Samples Received: 12

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Moisture	12	N/A	2017/02/01	CAM SOP-00445	Carter 2nd ed 51.2 m
PFOS and PFOA in soil	6	2017/01/31	2017/02/02	CAM SOP-00894	EPA537 m
PFOS and PFOA in soil	6	2017/02/02	2017/02/06	CAM SOP-00894	EPA537 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods. Results relate to samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Stephanie Pollen
Project Manager
10 Feb 2017 16:17:34

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Stephanie Pollen, Project Manager
Email: SPollen@maxxam.ca
Phone# (905) 817-5700

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB821			DVB822			
Sampling Date		2017/01/25 13:00			2017/01/25 14:30			
COC Number		593726-02-01			593726-02-01			
	UNITS	**H7 SIDE WALL**	**RDL**	**MDL**	**B3 SIDEWAY WEST**	**RDL**	**MDL**	**QC Batch**
Inorganics								
Moisture	%	10	1.0	0.50	10	1.0	0.50	4845997
Miscellaneous Parameters								
6:2 Fluorotelomer sulfonate	ug/kg	0.85	1.0	0.25	5.2 (1)	10	2.5	4845644
8:2 Fluorotelomer sulfonate	ug/kg	29	1.0	0.21	87 (1)	10	2.1	4845644
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1.0	0.39	<3.9 (1)	10	3.9	4845644
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1.0	0.29	<2.9 (1)	10	2.9	4845644
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1.0	0.25	<2.5 (1)	10	2.5	4845644
N-methylperfluorooctanesulfonamidol	ug/kg	<0.20	1.0	0.20	<2.0 (1)	10	2.0	4845644
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1.0	0.25	<2.5 (1)	10	2.5	4845644
Perfluorobutanoic acid	ug/kg	<0.23	1.0	0.23	<2.3 (1)	10	2.3	4845644
Perfluorodecane Sulfonate	ug/kg	17	1.0	0.20	16 (1)	10	2.0	4845644
Perfluorodecanoic Acid (PFDA)	ug/kg	0.43	1.0	0.28	3.7 (1)	10	2.8	4845644
Perfluorododecanoic Acid (PFDoA)	ug/kg	4.1	1.0	0.24	7.1 (1)	10	2.4	4845644
Perfluoroheptane sulfonate	ug/kg	0.35	1.0	0.15	<1.5 (1)	10	1.5	4845644
Perfluoroheptanoic Acid (PFHpA)	ug/kg	0.25	1.0	0.18	<1.8 (1)	10	1.8	4845644
Perfluorohexane Sulfonate (PFHxS)	ug/kg	1.0	1.0	0.19	4.6 (1)	10	1.9	4845644
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.38	1.0	0.21	<2.1 (1)	10	2.1	4845644
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.22	1.0	0.12	<1.2 (1)	10	1.2	4845644
Perfluorononanoic Acid (PFNA)	ug/kg	0.20	1.0	0.14	1.8 (1)	10	1.4	4845644
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	10	1.0	0.17	9.1 (1)	10	1.7	4845644
Perfluorooctane Sulfonate (PFOS)	ug/kg	180 (2)	10	1.6	460 (3)	100	16	4845644
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1.0	0.21	<2.1 (1)	10	2.1	4845644
Perfluorotetradecanoic Acid	ug/kg	<0.22	1.0	0.22	<2.2 (1)	10	2.2	4845644
Perfluorotridecanoic Acid	ug/kg	24	1.0	0.25	50 (1)	10	2.5	4845644
Perfluoroundecanoic Acid (PFUnA)	ug/kg	260 (2)	10	2.6	180 (1)	10	2.6	4845644

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Due to high concentrations of the target analytes, sample required 10x dilution. Detection limit was adjusted accordingly.

(2) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

(3) Due to high concentration of the target analyte, sample required 100x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB821			DVB822			
Sampling Date		2017/01/25 13:00			2017/01/25 14:30			
COC Number		593726-02-01			593726-02-01			
	UNITS	**H7 SIDE WALL**	**RDL**	**MDL**	**B3 SIDEWAY WEST**	**RDL**	**MDL**	**QC Batch**
Surrogate Recovery (%)								
13C4-Perfluorooctanesulfonate	%	89	N/A	N/A	83	N/A	N/A	4845644
13C4-Perfluorooctanoic acid	%	76	N/A	N/A	94	N/A	N/A	4845644
13C8-Perfluorooctanesulfonamide	%	67	N/A	N/A	94	N/A	N/A	4845644

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB823				DVB824			
Sampling Date		2017/01/26 10:58				2017/01/25 14:45			
COC Number		593726-02-01				593726-02-01			
	UNITS	**B3 SIDE WALL WEST TREATED**	**RDL**	**MDL**	**QC Batch**	**BOT 5FT LIFT**	**RDL**	**MDL**	**QC Batch**
Inorganics									
Moisture	%	16	1.0	0.50	4845997	7.2	1.0	0.50	4845997
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/kg	4.1 (1)	10	2.5	4849316	5.2	1.0	0.25	4845644
8:2 Fluorotelomer sulfonate	ug/kg	40 (1)	10	2.1	4849316	36	1.0	0.21	4845644
N-ethylperfluorooctane sulfonamide	ug/kg	<3.9 (1)	10	3.9	4849316	<0.39	1.0	0.39	4845644
N-ethylperfluorooctane sulfonamidoe	ug/kg	<2.9 (1)	10	2.9	4849316	<0.29	1.0	0.29	4845644
N-methylperfluorooctane sulfonamide	ug/kg	<2.5 (1)	10	2.5	4849316	<0.25	1.0	0.25	4845644
N-methylperfluorooctanesulfonamidol	ug/kg	<2.0 (1)	10	2.0	4849316	<0.20	1.0	0.20	4845644
Perfluorobutane Sulfonate (PFBS)	ug/kg	<2.5 (1)	10	2.5	4849316	<0.25	1.0	0.25	4845644
Perfluorobutanoic acid	ug/kg	<2.3 (1)	10	2.3	4849316	<0.23	1.0	0.23	4845644
Perfluorodecane Sulfonate	ug/kg	8.0 (1)	10	2.0	4849316	7.0	1.0	0.20	4845644
Perfluorodecanoic Acid (PFDA)	ug/kg	<2.8 (1)	10	2.8	4849316	1.6	1.0	0.28	4845644
Perfluorododecanoic Acid (PFDoA)	ug/kg	<2.4 (1)	10	2.4	4849316	3.9	1.0	0.24	4845644
Perfluoroheptane sulfonate	ug/kg	<1.5 (1)	10	1.5	4849316	0.58	1.0	0.15	4845644
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<1.8 (1)	10	1.8	4849316	0.35	1.0	0.18	4845644
Perfluorohexane Sulfonate (PFHxS)	ug/kg	6.3 (1)	10	1.9	4849316	3.2	1.0	0.19	4845644
Perfluorohexanoic Acid (PFHxA)	ug/kg	<2.1 (1)	10	2.1	4849316	0.38	1.0	0.21	4845644
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<1.2 (1)	10	1.2	4849316	1.2	1.0	0.12	4845644
Perfluorononanoic Acid (PFNA)	ug/kg	<1.4 (1)	10	1.4	4849316	1.8	1.0	0.14	4845644
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	3.0 (1)	10	1.7	4849316	5.5	1.0	0.17	4845644
Perfluorooctane Sulfonate (PFOS)	ug/kg	300 (1)	10	1.6	4849316	270 (2)	10	1.6	4845644
Perfluoropentanoic Acid (PFPeA)	ug/kg	2.7 (1)	10	2.1	4849316	0.27	1.0	0.21	4845644
Perfluorotetradecanoic Acid	ug/kg	<2.2 (1)	10	2.2	4849316	1.8	1.0	0.22	4845644
Perfluorotridecanoic Acid	ug/kg	3.5 (1)	10	2.5	4849316	26	1.0	0.25	4845644
Perfluoroundecanoic Acid (PFUnA)	ug/kg	32 (1)	10	2.6	4849316	28	1.0	0.26	4845644
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	121	N/A	N/A	4849316	90	N/A	N/A	4845644

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to matrix interference, internal standards exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compounds. The sample was diluted 10x and detection limit was adjusted accordingly.

(2) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB823				DVB824			
Sampling Date		2017/01/26 10:58				2017/01/25 14:45			
COC Number		593726-02-01				593726-02-01			
	UNITS	**B3 SIDE WALL WEST TREATED**	**RDL**	**MDL**	**QC Batch**	**BOT 5FT LIFT**	**RDL**	**MDL**	**QC Batch**
13C4-Perfluorooctanoic acid	%	115	N/A	N/A	4849316	90	N/A	N/A	4845644
13C8-Perfluorooctanesulfonamide	%	119	N/A	N/A	4849316	75	N/A	N/A	4845644

RDL = Reportable Detection Limit
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N/A = Not Applicable

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB825				DVB826			
Sampling Date		2017/01/25 14:45				2017/01/25 12:30			
COC Number		593726-02-01				593726-02-01			
	UNITS	**BOT 5 FT LIFT TREATED**	**RDL**	**MDL**	**QC Batch**	**NW LIFT BOT**	**RDL**	**MDL**	**QC Batch**
Inorganics									
Moisture	%	9.2	1.0	0.50	4845997	17	1.0	0.50	4845997
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/kg	<2.5 (1)	10	2.5	4849316	13 (2)	10	2.5	4845644
8:2 Fluorotelomer sulfonate	ug/kg	8.9 (1)	10	2.1	4849316	130 (2)	10	2.1	4845644
N-ethylperfluorooctane sulfonamide	ug/kg	<3.9 (1)	10	3.9	4849316	<3.9 (2)	10	3.9	4845644
N-ethylperfluorooctane sulfonamidoe	ug/kg	<2.9 (1)	10	2.9	4849316	<2.9 (2)	10	2.9	4845644
N-methylperfluorooctane sulfonamide	ug/kg	<2.5 (1)	10	2.5	4849316	<2.5 (2)	10	2.5	4845644
N-methylperfluorooctanesulfonamidol	ug/kg	<2.0 (1)	10	2.0	4849316	<2.0 (2)	10	2.0	4845644
Perfluorobutane Sulfonate (PFBS)	ug/kg	<2.5 (1)	10	2.5	4849316	2.6 (2)	10	2.5	4845644
Perfluorobutanoic acid	ug/kg	<2.3 (1)	10	2.3	4849316	<2.3 (2)	10	2.3	4845644
Perfluorodecane Sulfonate	ug/kg	<2.0 (1)	10	2.0	4849316	18 (2)	10	2.0	4845644
Perfluorodecanoic Acid (PFDA)	ug/kg	<2.8 (1)	10	2.8	4849316	5.8 (2)	10	2.8	4845644
Perfluorododecanoic Acid (PFDoA)	ug/kg	<2.4 (1)	10	2.4	4849316	<2.4 (2)	10	2.4	4845644
Perfluoroheptane sulfonate	ug/kg	<1.5 (1)	10	1.5	4849316	4.3 (2)	10	1.5	4845644
Perfluoroheptanoic Acid (PFHpA)	ug/kg	<1.8 (1)	10	1.8	4849316	3.1 (2)	10	1.8	4845644
Perfluorohexane Sulfonate (PFHxS)	ug/kg	<1.9 (1)	10	1.9	4849316	20 (2)	10	1.9	4845644
Perfluorohexanoic Acid (PFHxA)	ug/kg	<2.1 (1)	10	2.1	4849316	3.6 (2)	10	2.1	4845644
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	<1.2 (1)	10	1.2	4849316	4.2 (2)	10	1.2	4845644
Perfluorononanoic Acid (PFNA)	ug/kg	<1.4 (1)	10	1.4	4849316	4.0 (2)	10	1.4	4845644
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<1.7 (1)	10	1.7	4849316	5.9 (2)	10	1.7	4845644
Perfluorooctane Sulfonate (PFOS)	ug/kg	45 (1)	10	1.6	4849316	970 (3)	100	16	4845644
Perfluoropentanoic Acid (PFPeA)	ug/kg	<2.1 (1)	10	2.1	4849316	2.2 (2)	10	2.1	4845644
Perfluorotetradecanoic Acid	ug/kg	<2.2 (1)	10	2.2	4849316	<2.2 (2)	10	2.2	4845644
Perfluorotridecanoic Acid	ug/kg	5.4 (1)	10	2.5	4849316	<2.5 (2)	10	2.5	4845644
Perfluoroundecanoic Acid (PFUnA)	ug/kg	4.1 (1)	10	2.6	4849316	150 (2)	10	2.6	4845644

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

(1) Due to matrix interference, internal standards exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compounds. The sample was diluted 10x and detection limit was adjusted accordingly.

(2) Due to high concentrations of the target analytes, sample required 10x dilution. Detection limit was adjusted accordingly.

(3) Due to high concentration of the target analyte, sample required 100x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB825				DVB826			
Sampling Date		2017/01/25 14:45				2017/01/25 12:30			
COC Number		593726-02-01				593726-02-01			
	UNITS	**BOT 5 FT LIFT TREATED**	**RDL**	**MDL**	**QC Batch**	**NW LIFT BOT**	**RDL**	**MDL**	**QC Batch**
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	129	N/A	N/A	4849316	89	N/A	N/A	4845644
13C4-Perfluorooctanoic acid	%	134 (1)	N/A	N/A	4849316	96	N/A	N/A	4845644
13C8-Perfluorooctanesulfonamide	%	127	N/A	N/A	4849316	87	N/A	N/A	4845644

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Surrogate recovery was above the defined upper control limit (UCL). Laboratory spiked soil resulted in satisfactory recovery of the surrogate. When considered together, these QC data suggest that matrix interferences may be biasing the data high. Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB827				DVB828			
Sampling Date		2017/01/25 11:00				2017/01/26 10:40			
COC Number		593726-02-01				593726-02-01			
	UNITS	SOIL HORIZON DEEP WEST	RDL	MDL	QC Batch	SOIL HORIZON DEEP WEST TREATED	RDL	MDL	QC Batch
Inorganics									
Moisture	%	16	1.0	0.50	4845997	11	1.0	0.50	4845997
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/kg	10	1.0	0.25	4845644	<2.5 (1)	10	2.5	4849316
8:2 Fluorotelomer sulfonate	ug/kg	39	1.0	0.21	4845644	16 (1)	10	2.1	4849316
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1.0	0.39	4845644	<3.9 (1)	10	3.9	4849316
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1.0	0.29	4845644	<2.9 (1)	10	2.9	4849316
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1.0	0.25	4845644	<2.5 (1)	10	2.5	4849316
N-methylperfluorooctanesulfonamidol	ug/kg	<0.20	1.0	0.20	4845644	<2.0 (1)	10	2.0	4849316
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1.0	0.25	4845644	<2.5 (1)	10	2.5	4849316
Perfluorobutanoic acid	ug/kg	<0.23	1.0	0.23	4845644	<2.3 (1)	10	2.3	4849316
Perfluorodecane Sulfonate	ug/kg	5.4	1.0	0.20	4845644	<2.0 (1)	10	2.0	4849316
Perfluorodecanoic Acid (PFDA)	ug/kg	2.1	1.0	0.28	4845644	<2.8 (1)	10	2.8	4849316
Perfluorododecanoic Acid (PFDoA)	ug/kg	4.8	1.0	0.24	4845644	<2.4 (1)	10	2.4	4849316
Perfluoroheptane sulfonate	ug/kg	1.1	1.0	0.15	4845644	<1.5 (1)	10	1.5	4849316
Perfluoroheptanoic Acid (PFHpA)	ug/kg	0.45	1.0	0.18	4845644	<1.8 (1)	10	1.8	4849316
Perfluorohexane Sulfonate (PFHxS)	ug/kg	8.3	1.0	0.19	4845644	<1.9 (1)	10	1.9	4849316
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.86	1.0	0.21	4845644	<2.1 (1)	10	2.1	4849316
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	1.8	1.0	0.12	4845644	<1.2 (1)	10	1.2	4849316
Perfluorononanoic Acid (PFNA)	ug/kg	1.6	1.0	0.14	4845644	<1.4 (1)	10	1.4	4849316
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	8.5	1.0	0.17	4845644	<1.7 (1)	10	1.7	4849316
Perfluorooctane Sulfonate (PFOS)	ug/kg	280 (2)	10	1.6	4845644	150 (1)	10	1.6	4849316
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.65	1.0	0.21	4845644	<2.1 (1)	10	2.1	4849316
Perfluorotetradecanoic Acid	ug/kg	1.7	1.0	0.22	4845644	<2.2 (1)	10	2.2	4849316
Perfluorotridecanoic Acid	ug/kg	41 (2)	10	2.5	4845644	7.8 (1)	10	2.5	4849316
Perfluoroundecanoic Acid (PFUnA)	ug/kg	47	1.0	0.26	4845644	32 (1)	10	2.6	4849316
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	85	N/A	N/A	4845644	116	N/A	N/A	4849316
13C4-Perfluorooctanoic acid	%	86	N/A	N/A	4845644	120	N/A	N/A	4849316

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Due to matrix interference, internal standards exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compounds. The sample was diluted 10x and detection limit was adjusted accordingly.

(2) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB827				DVB828			
Sampling Date		2017/01/25 11:00				2017/01/26 10:40			
COC Number		593726-02-01				593726-02-01			
	UNITS	**SOIL HORIZON DEEP WEST**	**RDL**	**MDL**	**QC Batch**	**SOIL HORIZON DEEP WEST TREATED**	**RDL**	**MDL**	**QC Batch**
13C8-Perfluorooctanesulfonamide	%	76	N/A	N/A	4845644	123	N/A	N/A	4849316

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB829				DVB830			
Sampling Date		2017/01/25 14:00				2017/01/25 14:00			
COC Number		593726-02-01				593726-02-01			
	UNITS	**BOT HOLE 1**	**RDL**	**MDL**	**QC Batch**	**BOT HOLE 1 TREATED**	**RDL**	**MDL**	**QC Batch**
Inorganics									
Moisture	%	5.5	1.0	0.50	4845997	8.0	1.0	0.50	4845997
Miscellaneous Parameters									
6:2 Fluorotelomer sulfonate	ug/kg	3.8	1.0	0.25	4845644	<2.5 (1)	10	2.5	4849316
8:2 Fluorotelomer sulfonate	ug/kg	6.8	1.0	0.21	4845644	6.9 (1)	10	2.1	4849316
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1.0	0.39	4845644	<3.9 (1)	10	3.9	4849316
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1.0	0.29	4845644	<2.9 (1)	10	2.9	4849316
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1.0	0.25	4845644	<2.5 (1)	10	2.5	4849316
N-methylperfluorooctanesulfonamidol	ug/kg	<0.20	1.0	0.20	4845644	<2.0 (1)	10	2.0	4849316
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1.0	0.25	4845644	<2.5 (1)	10	2.5	4849316
Perfluorobutanoic acid	ug/kg	<0.23	1.0	0.23	4845644	<2.3 (1)	10	2.3	4849316
Perfluorodecane Sulfonate	ug/kg	2.2	1.0	0.20	4845644	<2.0 (1)	10	2.0	4849316
Perfluorodecanoic Acid (PFDA)	ug/kg	<0.28	1.0	0.28	4845644	<2.8 (1)	10	2.8	4849316
Perfluorododecanoic Acid (PFDoA)	ug/kg	1.1	1.0	0.24	4845644	<2.4 (1)	10	2.4	4849316
Perfluoroheptane sulfonate	ug/kg	1.5	1.0	0.15	4845644	<1.5 (1)	10	1.5	4849316
Perfluoroheptanoic Acid (PFHpA)	ug/kg	0.21	1.0	0.18	4845644	<1.8 (1)	10	1.8	4849316
Perfluorohexane Sulfonate (PFHxS)	ug/kg	4.5	1.0	0.19	4845644	<1.9 (1)	10	1.9	4849316
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.23	1.0	0.21	4845644	<2.1 (1)	10	2.1	4849316
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	0.68	1.0	0.12	4845644	<1.2 (1)	10	1.2	4849316
Perfluorononanoic Acid (PFNA)	ug/kg	0.56	1.0	0.14	4845644	<1.4 (1)	10	1.4	4849316
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	2.0	1.0	0.17	4845644	<1.7 (1)	10	1.7	4849316
Perfluorooctane Sulfonate (PFOS)	ug/kg	110 (2)	10	1.6	4845644	56 (1)	10	1.6	4849316
Perfluoropentanoic Acid (PFPeA)	ug/kg	<0.21	1.0	0.21	4845644	<2.1 (1)	10	2.1	4849316
Perfluorotetradecanoic Acid	ug/kg	0.26	1.0	0.22	4845644	<2.2 (1)	10	2.2	4849316
Perfluorotridecanoic Acid	ug/kg	7.1	1.0	0.25	4845644	4.4 (1)	10	2.5	4849316
Perfluoroundecanoic Acid (PFUnA)	ug/kg	13	1.0	0.26	4845644	6.2 (1)	10	2.6	4849316

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Due to matrix interference, internal standards exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compounds. The sample was diluted 10x and detection limit was adjusted accordingly.

(2) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB829				DVB830			
Sampling Date		2017/01/25 14:00				2017/01/25 14:00			
COC Number		593726-02-01				593726-02-01			
	UNITS	**BOT HOLE 1**	**RDL**	**MDL**	**QC Batch**	**BOT HOLE 1 TREATED**	**RDL**	**MDL**	**QC Batch**
Surrogate Recovery (%)									
13C4-Perfluorooctanesulfonate	%	99	N/A	N/A	4845644	138 (1)	N/A	N/A	4849316
13C4-Perfluorooctanoic acid	%	84	N/A	N/A	4845644	146 (1)	N/A	N/A	4849316
13C8-Perfluorooctanesulfonamide	%	81	N/A	N/A	4845644	122	N/A	N/A	4849316

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Surrogate recovery was above the defined upper control limit (UCL). Laboratory spiked soil resulted in satisfactory recovery of the surrogate. When considered together, these QC data suggest that matrix interferences may be biasing the data high. Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB831			DVB832			
Sampling Date		2017/01/26 08:00			2017/01/26 08:00			
COC Number		593726-02-01			593726-02-01			
	UNITS	**BOT HOLE 2**	**RDL**	**MDL**	**BOT HOLE 2 TREATED**	**RDL**	**MDL**	**QC Batch**
Inorganics								
Moisture	%	8.1	1.0	0.50	10	1.0	0.50	4845997
Miscellaneous Parameters								
6:2 Fluorotelomer sulfonate	ug/kg	5.8	1.0	0.25	<2.5 (1)	10	2.5	4849316
8:2 Fluorotelomer sulfonate	ug/kg	44	1.0	0.21	8.5 (1)	10	2.1	4849316
N-ethylperfluorooctane sulfonamide	ug/kg	<0.39	1.0	0.39	<3.9 (1)	10	3.9	4849316
N-ethylperfluorooctane sulfonamidoe	ug/kg	<0.29	1.0	0.29	<2.9 (1)	10	2.9	4849316
N-methylperfluorooctane sulfonamide	ug/kg	<0.25	1.0	0.25	<2.5 (1)	10	2.5	4849316
N-methylperfluorooctanesulfonamidol	ug/kg	<0.20	1.0	0.20	<2.0 (1)	10	2.0	4849316
Perfluorobutane Sulfonate (PFBS)	ug/kg	<0.25	1.0	0.25	<2.5 (1)	10	2.5	4849316
Perfluorobutanoic acid	ug/kg	<0.23	1.0	0.23	<2.3 (1)	10	2.3	4849316
Perfluorodecane Sulfonate	ug/kg	7.2	1.0	0.20	<2.0 (1)	10	2.0	4849316
Perfluorodecanoic Acid (PFDA)	ug/kg	2.0	1.0	0.28	<2.8 (1)	10	2.8	4849316
Perfluorododecanoic Acid (PFDoA)	ug/kg	9.1	1.0	0.24	<2.4 (1)	10	2.4	4849316
Perfluoroheptane sulfonate	ug/kg	1.0	1.0	0.15	<1.5 (1)	10	1.5	4849316
Perfluoroheptanoic Acid (PFHpA)	ug/kg	0.31	1.0	0.18	<1.8 (1)	10	1.8	4849316
Perfluorohexane Sulfonate (PFHxS)	ug/kg	4.4	1.0	0.19	<1.9 (1)	10	1.9	4849316
Perfluorohexanoic Acid (PFHxA)	ug/kg	0.87	1.0	0.21	<2.1 (1)	10	2.1	4849316
Perfluoro-n-Octanoic Acid (PFOA)	ug/kg	2.2	1.0	0.12	<1.2 (1)	10	1.2	4849316
Perfluorononanoic Acid (PFNA)	ug/kg	3.3	1.0	0.14	<1.4 (1)	10	1.4	4849316
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	6.8	1.0	0.17	<1.7 (1)	10	1.7	4849316
Perfluorooctane Sulfonate (PFOS)	ug/kg	180 (2)	10	1.6	32 (1)	10	1.6	4849316
Perfluoropentanoic Acid (PFPeA)	ug/kg	0.67	1.0	0.21	<2.1 (1)	10	2.1	4849316
Perfluorotetradecanoic Acid	ug/kg	4.0	1.0	0.22	<2.2 (1)	10	2.2	4849316
Perfluorotridecanoic Acid	ug/kg	37	1.0	0.25	5.2 (1)	10	2.5	4849316
Perfluoroundecanoic Acid (PFUnA)	ug/kg	41	1.0	0.26	4.2 (1)	10	2.6	4849316

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) Due to matrix interference, internal standards exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compounds. The sample was diluted 10x and detection limit was adjusted accordingly.

(2) Due to high concentration of the target analyte, sample required 10x dilution. Detection limit was adjusted accordingly.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

RESULTS OF ANALYSES OF SOIL

Maxxam ID		DVB831			DVB832			
Sampling Date		2017/01/26 08:00			2017/01/26 08:00			
COC Number		593726-02-01			593726-02-01			
	UNITS	**BOT HOLE 2**	**RDL**	**MDL**	**BOT HOLE 2 TREATED**	**RDL**	**MDL**	**QC Batch**
Surrogate Recovery (%)								
13C4-Perfluorooctanesulfonate	%	136 (1)	N/A	N/A	118	N/A	N/A	4849316
13C4-Perfluorooctanoic acid	%	116	N/A	N/A	126	N/A	N/A	4849316
13C8-Perfluorooctanesulfonamide	%	99	N/A	N/A	113	N/A	N/A	4849316

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable
(1) Surrogate recovery was above the defined upper control limit (UCL). Laboratory spiked soil resulted in satisfactory recovery of the surrogate. When considered together, these QC data suggest that matrix interferences may be biasing the data high. Because quantitation is performed using isotope dilution techniques, any apparent gains of the native compound that may occur during any of the sample preparation, extraction, cleanup or determinative steps will be mirrored by a similar gain of the labeled standard, and as such can be accounted for and corrected. Therefore, the quantification of these target compounds is not affected by the high surrogate recovery.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

TEST SUMMARY

Maxxam ID: DVB821
Sample ID: H7 SIDE WALL
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4845644	2017/01/31	2017/02/02	Daniela Zupu

Maxxam ID: DVB822
Sample ID: B3 SIDEWAY WEST
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4845644	2017/01/31	2017/02/02	Daniela Zupu

Maxxam ID: DVB823
Sample ID: B3 SIDE WALL WEST TREATED
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4849316	2017/02/02	2017/02/06	Janet Dalisay

Maxxam ID: DVB824
Sample ID: BOT 5FT LIFT
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4845644	2017/01/31	2017/02/02	Daniela Zupu

Maxxam ID: DVB825
Sample ID: BOT 5 FT LIFT TREATED
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4849316	2017/02/02	2017/02/06	Janet Dalisay

Maxxam ID: DVB826
Sample ID: NW LIFT BOT
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4845644	2017/01/31	2017/02/02	Daniela Zupu

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

TEST SUMMARY

Maxxam ID: DVB827
Sample ID: SOIL HORIZON DEEP WEST
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4845644	2017/01/31	2017/02/02	Daniela Zupu

Maxxam ID: DVB828
Sample ID: SOIL HORIZON DEEP WEST TREATED
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4849316	2017/02/02	2017/02/06	Janet Dalisay

Maxxam ID: DVB829
Sample ID: BOT HOLE 1
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4845644	2017/01/31	2017/02/02	Daniela Zupu

Maxxam ID: DVB830
Sample ID: BOT HOLE 1 TREATED
Matrix: Soil

Collected: 2017/01/25
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4849316	2017/02/02	2017/02/06	Janet Dalisay

Maxxam ID: DVB831
Sample ID: BOT HOLE 2
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4849316	2017/02/02	2017/02/06	Janet Dalisay

Maxxam ID: DVB832
Sample ID: BOT HOLE 2 TREATED
Matrix: Soil

Collected: 2017/01/26
Shipped:
Received: 2017/01/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	4845997	N/A	2017/02/01	Valentina Kaftani
PFOS and PFOA in soil	LCMS	4849316	2017/02/02	2017/02/06	Janet Dalisay

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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B718483
Report Date: 2017/02/10

Cape Cod Comission
Client Project #: PFC
Site Location: BFTA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
4845644	DZU	Matrix Spike(DVB823)	13C4-Perfluorooctanesulfonate	2017/02/02		NC	%	50 - 130
			13C4-Perfluorooctanoic acid	2017/02/02		NC	%	50 - 130
			13C8-Perfluorooctanesulfonamide	2017/02/02		NC	%	50 - 130
			6:2 Fluorotelomer sulfonate	2017/02/02		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/02/02		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2017/02/02		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/02/02		NC	%	70 - 130
			N-methylperfluorooctane sulfonamide	2017/02/02		NC	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/02/02		NC	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/02/02		NC	%	70 - 130
			Perfluorobutanoic acid	2017/02/02		NC	%	70 - 130
			Perfluorodecane Sulfonate	2017/02/02		NC	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/02/02		NC	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/02/02		NC	%	70 - 130
			Perfluoroheptane sulfonate	2017/02/02		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/02/02		NC	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/02		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2017/02/02		NC	%	70 - 130
			Perfluorotridecanoic Acid	2017/02/02		NC	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/02/02		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/02/02		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/02/02		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/02/02		NC	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/02		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/02/02		NC	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/02/02		NC	%	70 - 130
4845644	DZU	Matrix Spike DUP(DVB823)	13C4-Perfluorooctanesulfonate	2017/02/02		NC	%	50 - 130
			13C4-Perfluorooctanoic acid	2017/02/02		NC	%	50 - 130
			13C8-Perfluorooctanesulfonamide	2017/02/02		NC	%	50 - 130
			6:2 Fluorotelomer sulfonate	2017/02/02		NC	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/02/02		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2017/02/02		NC	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/02/02		NC	%	70 - 130
			N-methylperfluorooctane sulfonamide	2017/02/02		NC	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/02/02		NC	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/02/02		NC	%	70 - 130
			Perfluorobutanoic acid	2017/02/02		NC	%	70 - 130
			Perfluorodecane Sulfonate	2017/02/02		NC	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/02/02		NC	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/02/02		NC	%	70 - 130
			Perfluoroheptane sulfonate	2017/02/02		NC	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/02/02		NC	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/02		NC	%	70 - 130
			Perfluorotetradecanoic Acid	2017/02/02		NC	%	70 - 130
			Perfluorotridecanoic Acid	2017/02/02		NC	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/02/02		NC	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/02/02		NC	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/02/02		NC	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/02/02		NC	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/02		NC	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/02/02		NC	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/02/02		NC	%	70 - 130
4845644	DZU	MS/MSD RPD	6:2 Fluorotelomer sulfonate	2017/02/02	NC		%	30

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			8:2 Fluorotelomer sulfonate	2017/02/02	NC		%	30
			N-ethylperfluorooctane sulfonamide	2017/02/02	NC		%	30
			N-ethylperfluorooctane sulfonamidoe	2017/02/02	NC		%	30
			N-methylperfluorooctane sulfonamide	2017/02/02	NC		%	30
			N-methylperfluorooctanesulfonamidol	2017/02/02	NC		%	30
			Perfluorobutane Sulfonate (PFBS)	2017/02/02	NC		%	30
			Perfluorobutanoic acid	2017/02/02	NC		%	30
			Perfluorodecane Sulfonate	2017/02/02	NC		%	30
			Perfluorodecanoic Acid (PFDA)	2017/02/02	NC		%	30
			Perfluorododecanoic Acid (PFDoA)	2017/02/02	NC		%	30
			Perfluoroheptane sulfonate	2017/02/02	NC		%	30
			Perfluorononanoic Acid (PFNA)	2017/02/02	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/02	NC		%	25
			Perfluorotetradecanoic Acid	2017/02/02	NC		%	30
			Perfluorotridecanoic Acid	2017/02/02	NC		%	30
			Perfluoroundecanoic Acid (PFUnA)	2017/02/02	NC		%	30
			Perfluoroheptanoic Acid (PFHpA)	2017/02/02	NC		%	30
			Perfluorohexane Sulfonate (PFHxS)	2017/02/02	NC		%	30
			Perfluorohexanoic Acid (PFHxA)	2017/02/02	NC		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/02	NC		%	30
			Perfluorooctane Sulfonate (PFOS)	2017/02/02	NC		%	30
			Perfluoropentanoic Acid (PFPeA)	2017/02/02	NC		%	30
4845644	DZU	Spiked Blank	13C4-Perfluorooctanesulfonate	2017/02/02		89	%	50 - 130
			13C4-Perfluorooctanoic acid	2017/02/02		85	%	50 - 130
			13C8-Perfluorooctanesulfonamide	2017/02/02		69	%	50 - 130
			6:2 Fluorotelomer sulfonate	2017/02/02		114	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/02/02		114	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2017/02/02		98	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/02/02		102	%	70 - 130
			N-methylperfluorooctane sulfonamide	2017/02/02		108	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/02/02		88	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/02/02		122	%	70 - 130
			Perfluorobutanoic acid	2017/02/02		103	%	70 - 130
			Perfluorodecane Sulfonate	2017/02/02		98	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/02/02		119	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/02/02		112	%	70 - 130
			Perfluoroheptane sulfonate	2017/02/02		102	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/02/02		114	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/02		112	%	70 - 130
			Perfluorotetradecanoic Acid	2017/02/02		112	%	70 - 130
			Perfluorotridecanoic Acid	2017/02/02		106	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/02/02		122	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/02/02		102	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/02/02		110	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/02/02		121	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/02		116	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/02/02		104	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/02/02		122	%	70 - 130
4845644	DZU	Method Blank	13C4-Perfluorooctanesulfonate	2017/02/02		83	%	50 - 130
			13C4-Perfluorooctanoic acid	2017/02/02		83	%	50 - 130
			13C8-Perfluorooctanesulfonamide	2017/02/02		75	%	50 - 130
			6:2 Fluorotelomer sulfonate	2017/02/02	<0.25		ug/kg	
			8:2 Fluorotelomer sulfonate	2017/02/02	<0.21		ug/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2017/02/02	<0.39		ug/kg	
			N-ethylperfluorooctane sulfonamidoe	2017/02/02	<0.29		ug/kg	
			N-methylperfluorooctane sulfonamide	2017/02/02	<0.25		ug/kg	
			N-methylperfluorooctanesulfonamidol	2017/02/02	<0.20		ug/kg	
			Perfluorobutane Sulfonate (PFBS)	2017/02/02	<0.25		ug/kg	
			Perfluorobutanoic acid	2017/02/02	<0.23		ug/kg	
			Perfluorodecane Sulfonate	2017/02/02	<0.20		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2017/02/02	<0.28		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2017/02/02	<0.24		ug/kg	
			Perfluoroheptane sulfonate	2017/02/02	<0.15		ug/kg	
			Perfluorononanoic Acid (PFNA)	2017/02/02	<0.14		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/02	<0.17		ug/kg	
			Perfluorotetradecanoic Acid	2017/02/02	<0.22		ug/kg	
			Perfluorotridecanoic Acid	2017/02/02	<0.25		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2017/02/02	<0.26		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2017/02/02	<0.18		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2017/02/02	<0.19		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2017/02/02	<0.21		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/02	<0.12		ug/kg	
			Perfluorooctane Sulfonate (PFOS)	2017/02/02	<0.16		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2017/02/02	<0.21		ug/kg	
4845997	VK	RPD - Sample/Sample Dup	Moisture	2017/02/01	2.3		%	20
4849316	JDA	Spiked Blank	13C4-Perfluorooctanesulfonate	2017/02/06		101	%	50 - 130
			13C4-Perfluorooctanoic acid	2017/02/06		99	%	50 - 130
			13C8-Perfluorooctanesulfonamide	2017/02/06		89	%	50 - 130
			6:2 Fluorotelomer sulfonate	2017/02/06		92	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/02/06		93	%	70 - 130
			N-ethylperfluorooctane sulfonamide	2017/02/06		94	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/02/06		91	%	70 - 130
			N-methylperfluorooctane sulfonamide	2017/02/06		95	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/02/06		83	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/02/06		76	%	70 - 130
			Perfluorobutanoic acid	2017/02/06		72	%	70 - 130
			Perfluorodecane Sulfonate	2017/02/06		79	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/02/06		85	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/02/06		95	%	70 - 130
			Perfluoroheptane sulfonate	2017/02/06		90	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/02/06		106	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/06		93	%	70 - 130
			Perfluorotetradecanoic Acid	2017/02/06		102	%	70 - 130
			Perfluorotridecanoic Acid	2017/02/06		90	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/02/06		94	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/02/06		86	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/02/06		94	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/02/06		100	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/06		93	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/02/06		88	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/02/06		84	%	70 - 130
4849316	JDA	Spiked Blank DUP	13C4-Perfluorooctanesulfonate	2017/02/06		109	%	50 - 130
			13C4-Perfluorooctanoic acid	2017/02/06		110	%	50 - 130
			13C8-Perfluorooctanesulfonamide	2017/02/06		87	%	50 - 130
			6:2 Fluorotelomer sulfonate	2017/02/06		88	%	70 - 130
			8:2 Fluorotelomer sulfonate	2017/02/06		90	%	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			N-ethylperfluorooctane sulfonamide	2017/02/06		86	%	70 - 130
			N-ethylperfluorooctane sulfonamidoe	2017/02/06		97	%	70 - 130
			N-methylperfluorooctane sulfonamide	2017/02/06		91	%	70 - 130
			N-methylperfluorooctanesulfonamidol	2017/02/06		83	%	70 - 130
			Perfluorobutane Sulfonate (PFBS)	2017/02/06		92	%	70 - 130
			Perfluorobutanoic acid	2017/02/06		87	%	70 - 130
			Perfluorodecane Sulfonate	2017/02/06		74	%	70 - 130
			Perfluorodecanoic Acid (PFDA)	2017/02/06		86	%	70 - 130
			Perfluorododecanoic Acid (PFDoA)	2017/02/06		88	%	70 - 130
			Perfluoroheptane sulfonate	2017/02/06		80	%	70 - 130
			Perfluorononanoic Acid (PFNA)	2017/02/06		93	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/06		84	%	70 - 130
			Perfluorotetradecanoic Acid	2017/02/06		96	%	70 - 130
			Perfluorotridecanoic Acid	2017/02/06		79	%	70 - 130
			Perfluoroundecanoic Acid (PFUnA)	2017/02/06		90	%	70 - 130
			Perfluoroheptanoic Acid (PFHpA)	2017/02/06		87	%	70 - 130
			Perfluorohexane Sulfonate (PFHxS)	2017/02/06		91	%	70 - 130
			Perfluorohexanoic Acid (PFHxA)	2017/02/06		102	%	70 - 130
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/06		89	%	70 - 130
			Perfluorooctane Sulfonate (PFOS)	2017/02/06		85	%	70 - 130
			Perfluoropentanoic Acid (PFPeA)	2017/02/06		80	%	70 - 130
4849316	JDA	RPD	6:2 Fluorotelomer sulfonate	2017/02/06	4.0		%	30
			8:2 Fluorotelomer sulfonate	2017/02/06	3.9		%	30
			N-ethylperfluorooctane sulfonamide	2017/02/06	8.0		%	30
			N-ethylperfluorooctane sulfonamidoe	2017/02/06	6.0		%	30
			N-methylperfluorooctane sulfonamide	2017/02/06	4.3		%	30
			N-methylperfluorooctanesulfonamidol	2017/02/06	0.48		%	30
			Perfluorobutane Sulfonate (PFBS)	2017/02/06	20		%	30
			Perfluorobutanoic acid	2017/02/06	19		%	30
			Perfluorodecane Sulfonate	2017/02/06	6.3		%	30
			Perfluorodecanoic Acid (PFDA)	2017/02/06	0.94		%	30
			Perfluorododecanoic Acid (PFDoA)	2017/02/06	7.9		%	30
			Perfluoroheptane sulfonate	2017/02/06	12		%	30
			Perfluorononanoic Acid (PFNA)	2017/02/06	13		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/06	9.5		%	25
			Perfluorotetradecanoic Acid	2017/02/06	5.3		%	30
			Perfluorotridecanoic Acid	2017/02/06	14		%	30
			Perfluoroundecanoic Acid (PFUnA)	2017/02/06	4.3		%	30
			Perfluoroheptanoic Acid (PFHpA)	2017/02/06	0.46		%	30
			Perfluorohexane Sulfonate (PFHxS)	2017/02/06	3.0		%	30
			Perfluorohexanoic Acid (PFHxA)	2017/02/06	2.4		%	30
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/06	4.4		%	30
			Perfluorooctane Sulfonate (PFOS)	2017/02/06	4.2		%	30
			Perfluoropentanoic Acid (PFPeA)	2017/02/06	5.4		%	30
4849316	JDA	Method Blank	13C4-Perfluorooctanesulfonate	2017/02/06		111	%	50 - 130
			13C4-Perfluorooctanoic acid	2017/02/06		103	%	50 - 130
			13C8-Perfluorooctanesulfonamide	2017/02/06		90	%	50 - 130
			6:2 Fluorotelomer sulfonate	2017/02/06	<0.25		ug/kg	
			8:2 Fluorotelomer sulfonate	2017/02/06	<0.21		ug/kg	
			N-ethylperfluorooctane sulfonamide	2017/02/06	<0.39		ug/kg	
			N-ethylperfluorooctane sulfonamidoe	2017/02/06	<0.29		ug/kg	
			N-methylperfluorooctane sulfonamide	2017/02/06	<0.25		ug/kg	
			N-methylperfluorooctanesulfonamidol	2017/02/06	<0.20		ug/kg	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			Perfluorobutane Sulfonate (PFBS)	2017/02/06	<0.25		ug/kg	
			Perfluorobutanoic acid	2017/02/06	<0.23		ug/kg	
			Perfluorodecane Sulfonate	2017/02/06	<0.20		ug/kg	
			Perfluorodecanoic Acid (PFDA)	2017/02/06	<0.28		ug/kg	
			Perfluorododecanoic Acid (PFDoA)	2017/02/06	<0.24		ug/kg	
			Perfluoroheptane sulfonate	2017/02/06	<0.15		ug/kg	
			Perfluorononanoic Acid (PFNA)	2017/02/06	<0.14		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2017/02/06	<0.17		ug/kg	
			Perfluorotetradecanoic Acid	2017/02/06	<0.22		ug/kg	
			Perfluorotridecanoic Acid	2017/02/06	<0.25		ug/kg	
			Perfluoroundecanoic Acid (PFUnA)	2017/02/06	<0.26		ug/kg	
			Perfluoroheptanoic Acid (PFHpA)	2017/02/06	<0.18		ug/kg	
			Perfluorohexane Sulfonate (PFHxS)	2017/02/06	<0.19		ug/kg	
			Perfluorohexanoic Acid (PFHxA)	2017/02/06	<0.21		ug/kg	
			Perfluoro-n-Octanoic Acid (PFOA)	2017/02/06	<0.12		ug/kg	
			Perfluorooctane Sulfonate (PFOS)	2017/02/06	<0.16		ug/kg	
			Perfluoropentanoic Acid (PFPeA)	2017/02/06	<0.21		ug/kg	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Sin Chii Chia, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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